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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/019,485	04/17/2002	Svend-Erik Mikkelsen	H0610.0000	1371

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EXAMINER

TOOMER, CEPHIA D

ART UNIT	PAPER NUMBER
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1714

DATE MAILED: 04/19/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/019,485

Applicant(s)

MIKKELSEN ET AL.

Examiner

Cephia D. Toomer

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 19 January 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 12-15 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 12-15 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)             | 4) <input type="checkbox"/> Interview Summary (PTO-413)                     |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)    | Paper No(s)/Mail Date. _____  |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date _____   | 6) <input type="checkbox"/> Other: _____                                    |

### **DETAILED ACTION**

This Office action is in response to the amendment filed January 19, 2005 in which claims 7-11 were canceled and claims 12-15 were added.

The 103 rejection of the claims over Basu is withdrawn in view of Applicant canceling the claims.

#### ***Claim Rejections - 35 USC § 103***

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 12-15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Norton (US 4,422,412) in view of Karpuk (US 4,876,986) and EP 431,357.

Norton teaches a compression ignition engine (diesel engine) containing a heat exchanger that converts methanol to dimethyl ether (see abstract; col. 1, lines 45-53) and a method of running a compression ignition engine (see col.2, lines 63-64). The alcohol is run through the exchanger to the catalytic converter where the alcohol is converted to ether. The proportion of methanol fed to the engine via the catalytic converter can be from 5-50% of the total methanol flow to the engine (see col. 4, lines 32-35). The temperature in the catalytic converter is from about 80-400 °C (see col. 2, lines 63-68; col. 3, lines 1-10; 46-50). Norton teaches that the exhaust gases pass through the catalytic converter chamber (see col. 42-44). Norton teaches the limitations of the claims other than the differences that are discussed below.

In the first aspect, Norton differs from the claims in that he does not specifically teach the pressure at which the conversion takes place. However, it would have been obvious to one of ordinary skill in the art at the time the invention was made to optimize the pressure through routine experimentation for best results. As to optimization results, a patent will not be granted based upon the optimization of result effective variables when the optimization is obtained through routine experimentation unless there is a showing of unexpected results that properly rebuts the *prima facie* case of obviousness. See *In re Boesch*, 617 F.2d 272, 276, 205 USPQ 215, 219 (CCPA 1980). See also *In re Woodruff*, 919 F.2d 1575, 1578, 16 USPQ2d 1934, 1936-37 (Fed. Cir. 1990), and *In re Aller*, 220 F.2d 454, 456, 105 USPQ 233, 235 (CCPA 1955).

In the second aspect, Norton differs from the claims in that he does not specifically teach that the air for combustion is preheated to a temperature of at least 60 °C. However, Karpuk teaches that it is conventional to preheat the air for combustion by exchange with exhaust gas in processes for alcohol fueled internal combustion engines (see col. 2, lines 54-60; col. 4, lines 35-43; Fig 4). While Karpuk does not specifically teach the air temperature, EP teaches that water/alcohol fuels are mixed with preheated combustion air and that such mixture is introduced into the combustion chamber of the engine. The air is preheated to at least about 350 °F to about 400 °F (177-204 °C) in engines that contain carburetors and from about 122 °F to about 158 °F (50-70 °C) for those engines that contain spark plugs (see col. 1, lines 37-53).

It would have been obvious to one of ordinary skill in the art to preheat the air prior to combustion with the fuel because Karpuk teaches that this is a conventional

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method step in operating compression engines. It would have been obvious to heat the air to at least 60 °C because EP teaches that by heating the air to the claimed temperature and combining it with the alcoholic fuel that the combusted fuel produces reduced pollutants and increases the amount of energy delivered by the fuel (see col. 1, lines 21-36; col. 3, lines 8-32).

3. Applicant's arguments have been fully considered but they are not persuasive.

Applicant argues that Norton is not concerned with compositions that contain less than 50% of methanol.

At col. 4, lines 32-35, Norton teaches that the proportion of methanol fed to the engine can be from 5 to 50% of the total methanol flow and at col. 2, lines 1-5, Norton teaches that the amount of methanol to be converted to DME can be adjusted. Therefore, Norton suggests that it would be obvious to optimize this result effective variable.

Applicant argues that Norton does not teach the need for the combustion air to be preheated.

The combination of Karpuk and EP teach that it is conventional to preheat the air and that this process step allows for the fuel to combust with reduced pollutants and increased energy.

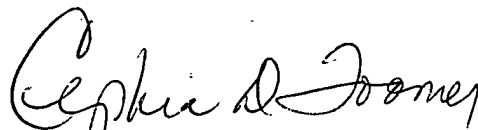
Applicant argues that Norton is completely silent with respect to the reduction of NO<sub>x</sub>.

Since the prior art composition and Applicant's are similar if not the same, it would be reasonable to expect that upon combustion of the fuel of Norton that less NO<sub>x</sub> would be produced, absent evidence to the contrary.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Cephia D. Toomer whose telephone number is 571-272-1126. The examiner can normally be reached on Monday-Thursday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Vasu Jagannathan can be reached on 571-272-1119. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Cephia D. Toomer  
Primary Examiner  
Art Unit 1714